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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/525,391   | 02/22/2005  | Gerd van der Heyd    | VAN DER HEYD1       | 7630             |
| 1444 7590 09/02/2008<br>BROWDY AND NEIMARK, P.L.L.C.<br>624 NINTH STREET, NW<br>SUITE 300<br>WASHINGTON, DC 20001-5303 |             |                      |                     |                  |
| EXAMINER<br>CRANDALL, LYNSEY P   |             |                      |                     |                  |
| ART UNIT   |             | PAPER NUMBER         |                     |                  |
| 4158   |             |                      |                     |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/525,391

**Applicant(s)**

VAN DER HEYD ET AL.

**Examiner**

LYNSEY CRANDALL

**Art Unit**

4158

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 2/22/2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/86)  
Paper No(s)/Mail Date 2/22/2005
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 5-6, 8-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,726,680 to Knopp et al. in view of US PGPub 2004/0102765 to Koenig.

3. [Claim 1] Knopp et al. teach a laser system for high precision laser eye surgery. This system includes a computer control assembly (16) with video monitor/user interface (18,19) a treatment laser (87) a beam steering and focusing and expander assembly (81) a depth ranging and tracking assembly (84) and an X-Y tracking assembly (85). This laser system aims the laser beam at a point in X-Y directions and focuses the beam at a desired depth. The beam steering controls the position at which the beam is aimed in X-Y directions and the beam focusing controls the depth at which the laser beam is focused. This laser system also tracks eye movements of the patient during the progress of the surgery, including X-Y tracking and depth or Z tracking. Knopp et al. is silent with regards to a plasma sensor and the integration of elements into a multi-sensor processing head.

4. Koenig teaches a device for minimal to non-invasive optical treatment of tissues of the eye with a laser. This device contains a radiation detector (20) that detects the

fluorescence and the luminescence of the plasma. This radiation detector is connected to common evaluation and display devices (Claim 12). It would have been obvious to a person having ordinary skill in the art at the time of the invention to combine the plasma detector taught by Koenig with the laser system taught by Koenig in order to measure the plasma glow.

5. Although Koenig and Knopp et al. don't teach the integration of several of the claimed elements, making parts integral has no patentable significance barring any new or unexpected results (MPEP 2144.04).
6. [Claims 2 and 3] Knopp et al. teach a surgical laser (17) that emits radiation in the visible wavelength range (Column 17, lines 54-55). Knopp et al. also teach an infrared treatment laser (87) (Column 18, line 19). Additionally, prisms are taught to steer and aim both the visible and infrared laser beams (Column 17, lines 32-38).
7. [Claim 5] Knopp et al. teaches fast imaging and tracking in the X-Y plane with a pivoting tracking mirror which is under the directional control of a piezoelectric transducer (Column 12, lines 13-24)
8. [Claim 6] Figure 10 of Knopp et al. clearly shows the feedback controls of the laser system. X-Y-Z position and tracking units are coupled with the computer control assembly to provide position feedback of both the eye and the laser beam.
9. [Claim 8] Knopp et al. teach that the eye sends information to an X-Y and Z position analysis tracking detectors or sensors (50) (Column 27, lines 48-52). The X-Y sensors will determine distance to a rim point of the cornea and the Z sensors will determine the distance to the center of the cornea.

10. [Claim 9] Koenig teaches the plasma (radiation) detector (20) is a CCD camera (Claim 17).
11. [Claim 10] Knopp et al. teach a topography system (77) to measure the contour of the eye being treated that includes a CCD camera (Column 28, lines 21-36).
12. [Claim 11] Knopp et al. teach an energy monitoring assembly (80) that is electronically relayed to the computer control assembly (16) which in turn analyzes the output energy from laser (87) and adjusts the laser energy as necessary (Column 17, lines 16-31). The fact that this laser output sensor is integrated with any other element of the laser system has no patentable significance barring any new and unexpected results.
13. [Claim 12] Knopp et al. teach a surgical microscope (86). The fact that this laser output sensor is integrated with any other element of the laser system has no patentable significance barring any new and unexpected results.
14. [Claim 14] Knopp et al. teach multiple display units. For example, viewing means for presenting the surgeon, on a display unit, an adjustably magnified image of the target eye area and the area adjacent in real-time. Additionally, display means are taught for presenting the surgeon the image from the viewing means plus computer-generated overlays including textual and graphic representations of aspects such as topography of the cornea and the microsurgery templates to be used (Column 9, lines 50-67).

15. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,726,680 to Knopp et al. in view of US PGPub 2004/0102765 to Koenig in further view of US Patent 4,901,718 to Bille et al.

16. All the limitations of claim 1 have been previously taught by Knopp et al. and Koenig, but they are silent with regards to adaptive optics or a displaceable telecentric focusing lens. Bille et al. teach a 3-dimensional laser beam guidance system for laser treatment of the cornea. Bille et al. teach a laser beam guidance system that includes a telecentric arrangement of convex lenses which are moveable to focus the laser at a selected point on the path of the laser beam (Column 2, lines 58-61). It would have been obvious to a person having ordinary skill in the art at the time of the invention to combine the displaceable telecentric focusing lens taught by Bille et al. with the laser system taught by Knopp et al. in view of Koenig in order to provide exact positioning depth of the laser beam.

17. Claims 7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,726,680 to Knopp et al. in view of US PGPub 2004/0102765 to Koenig in further view of US Patent 6,322,216 to Yee et al.

18. All the limitations of claim 1 have been previously taught by Knopp et al. and Koenig, but they are silent with regards to an eye position sensor unit comprising two CCD line scan cameras. Yee et al. teach horizontal and vertical cameras to measure eye movement along the X and Y axes. Additionally, these cameras are CCD cameras (Column 6, lines 44-67). It would have been obvious to a person having ordinary skill in the art at the time of the invention to combine the eye position sensor unit comprising

two CCD line scan cameras taught by Yee et al. with the laser system device taught by Knopp et al. in view of Koenig in order to provide a more accurate eye position tracker.

19. [Claim 13] Knopp et al. teach a computer control assembly (16) with microprocessors (140 and 150). The computer control assembly and related microprocessors are all coupled with the X-Y and Z eye position tracking systems and the infrared laser beam steering, aiming and focusing unit (Figure 10). The eye position tracking system taught by Yee et al. consists of two vertical and horizontal CCD cameras. Koenig teaches a radiation detector that detects the fluorescence and the luminescence of the plasma. This plasma detector consists of a CCD camera and is connected to common evaluation and display devices. These evaluation devices are comparable to the computer control assembly taught by Knopp et al. Therefore, Koenig's CCD plasma detector, Yee et al.'s eye position tracking system of two CCD line cameras, the laser beam and the aiming, steering and focusing units are all coupled into the computer control assembly with related microprocessors as seen in Figure 10 of Knopp et al. It would have been obvious to combine these elements from Koenig, Yee et al. and Knopp in this manner in order to achieve a more effective and precise laser system for corneal surgery.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LYNSEY CRANDALL whose telephone number is (571)270-7035. The examiner can normally be reached on Monday to Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jackson can be reached on (571)272-4697. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/L. C./  
Examiner, Art Unit 4158  
08/14/2008

/Gary Jackson/  
Supervisory Patent Examiner  
Art Unit 4158